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ABSTRACT

The paper examines the learning style preferences of 44 second-year Japanese college students pursuing an undergraduate degree and learning English as a Second Language at a New Zealand college. The goal is to learn more about between style and achievement, and how to cater to such students as multi-dimensional individuals and as members of a cultural group that has a distinct learning style profile. Achievement was measured by grades and on the results of the Test of English for International Communication (TOEIC). Learning style preferences were measured on the Perceptual Learning Style (PSLP) and the Style Analysis Survey (SAS). Results showed the most preferred sensory styles to be kinesthetic, auditory, and tactile (PLSP), and hands-on (SAS). "Group" was the preferred social style (PLSP). More students were "concrete-sequential" than "intuitive," and "global" rather than "analytical." Numbers were evenly balanced between "extroverted/introverted" and "closure/open" modalities (SAS). No strong relationships were found between style and TOEIC scores, but there was a significant relationship between a kinesthetic style preference and higher grades in the practical, skills-based course in which the students were enrolled. Factors positively affecting achievement on TOEIC and in terms of grades included the following: home-stay experience, previous experience studying with a native teacher, participation in extracurricular activities in English, and female gender. Some possible ways in which teachers and administrators can take learning styles into account are briefly considered. Bar charts and tables are included. 16 references. (KFT)

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# Relating Preferred Learning Style to Student Achievement

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## Abstract

This paper reports the results of a pilot study on the learning style preferences of Japanese students and the relationship between style and achievement. Achievement was measured in grades and on TOEIC (Test of English for International Communication). Learning style preferences were measured on the Perceptual Learning Style Profile (PLSP) (Reid, 1987) and the Style Analysis Survey (SAS) (Oxford, 1993). Results showed the most preferred sensory styles to be: *kinesthetic, auditory* and *tactile* (PLSP), and *hands-on* (SAS). *Group* was the least preferred social style (PLSP). More students were *concrete-sequential* than *intuitive*, and *global* rather than *analytical*. Numbers were evenly balanced between *extraverted/ introverted* and *closure/ open* modalities (SAS). No strong relationships were found between style and TOEIC scores, but there was a significant relationship between a *kinesthetic* style preference and higher grades in the practical, skills-based course in which the students were enrolled. Factors positively affecting achievement both on TOEIC and in terms of grades included: home-stay experience, previous experience studying with a native teacher, participation in extra-curricular activities in English, and female gender. Some possible ways in which teachers and administrators can take learning style preferences into account are briefly considered.

The objectives in the present study were to understand more about the learning style preferences of our students in order to better cater for them both as individuals who are multi-dimensional, and as members of a cultural group that has a distinct learning style profile.

## Methodology

We carried out a pilot study on learning style preferences and the relationship between style and achievement, as this is measured in grades and on TOEIC (Test of English for International Communication). The study involved 44 Japanese students (31 male, 13 female) in their second year of a content-based diploma programme at a New Zealand college. We administered two instruments: the Perceptual Learning Style Profile (PLSP) (Reid, 1987); and the Style Analysis Survey (SAS) (Oxford, 1993). Both have been validated and widely used in many countries. The surveys were translated into Japanese because the English level of many students was low. The PLSP translation was one previously used in a study that replicated Reid's original work (Hyland, 1994). The SAS translation, by the same translator (Takahiro Kojima), was made for this study. It is hoped to carry out further work to validate the translation, a challenging task (Eliason 1995). We also used a personal information questionnaire which included items on gender, major, home-stay experience, participation in extra-curricular activities in English and previous instruction by a native teacher. (See Table I for a summary of this information). Originally it was also intended to include analysis of student learning logs, but these students tended to be uncomfortable writing reflections about their study.

**Perceptual Learning Style Profile**: Reid's PLSP is a 30 item, self-rating questionnaire with five randomly arranged items on each of six modalities. Four of these are sensory (visual, auditory, kinesthetic, tactile) and two are affective (group and individual). Its verification was achieved through the split-half method and correlation analysis of an original 60 statements. (See Reid 1990 for a detailed discussion).

**Style Analysis Survey:** Oxford's SAS contains 110 questions, grouped into five categories. There are three sensory measures (visual, auditory and hands-on) and

four sets of paired variables (extroverted/introverted, intuitive/concrete-sequential, closure-oriented/open, and global/analytic). The SAS has been shown to have high validity and has been widely used.

**TABLE 1**
**Summary of Personal Information Questionnaire Variables**

| Gender | *n* |
|---|---|
| Male | 31 |
| Female | 13 |
| | 44 |

| Major field | *n* |
|---|---|
| Business | 18 |
| Global Communications (Computing) | 7 |
| Human Environment | 18 |
| Other | 1 |
| | 44 |

| Homestay | *n* |
|---|---|
| yes | 16 |
| no | 28 |
| | 44 |

| Native Teacher | *n* |
|---|---|
| yes | 17 |
| no | 27 |
| | 44 |

| Extracurricular activities | *n* |
|---|---|
| yes | 11 |
| no | 33 |
| | 44 |

| TOEIC Score | *n* |
|---|---|
| 200 – 299 | 6 |
| 300 – 399 | 9 |
| 400 – 499 | 14 |
| 500 – 599 | 10 |
| 600 – 699 | 4 |
| Did not sit | 1 |
| | 44 |

| Average Grade | *n* |
|---|---|
| < 50 | 5 |
| 50 – 64 | 22 |
| 64 – 79 | 17 |
| > 80 | 0 |
| | 44 |

**Analysis:** The responses to the surveys and to the personal information questionnaire were examined for relationships. Following Reid's procedure, scores on the Perceptual Learning Style Profile survey were scaled out of 20 and the means for each learning style preference were classified as major, minor or negative. Also, following Reid, analysis of variance was used to analyse the preference means ($p < .05$). Although our sample is small, we hoped to identify trends for follow-up in a larger study.

Following directions for interpretation of the Style Analysis Survey, responses were analysed according to which style students preferred out of each paired set (for example, global/analytic, extraverted/introverted). If scores were within two points of each other, both styles were considered preferences. The proportion of students selecting each style was calculated and related to the other variables including home-stay, gender, and so forth. Then, in order to further explore relationships between variables, the mean preferences shown on the SAS were also calculated and analysis of variance was carried out.

## Results and Discussion

**Perceptual Learning Style Profile:** Previous studies with the PLSP had shown Japanese students to be unique amongst all of the cultural groups tested in that they did not identify any major learning style preferences, as defined by Reid (mean > 13.5). In contrast, analysis of the results of the present study showed that students did

report three major preferences (kinesthetic, auditory and tactile), and three minor preferences (individual, visual and group).

At least one other researcher has been able to identify preferences amongst Japanese students using Reid's survey, but she did this by softening the original survey responses ("Strongly Agree/ Disagree"), suggesting that rewording would make the instrument more culturally appropriate (Ozeki, 1995). Why our students used the strong responses when students in other studies did not is an interesting question. One possible answer is that we have an atypical student population and/or an atypical institutional climate that fosters greater openness. Our students have had considerable practice filling in questionnaires and evaluations (of lecturers, of courses and of services). Another factor is that all of the students we surveyed had just completed a semester-long Study Skills course that included input on Multiple Intelligences, which is a concept closely related to learning styles. Perhaps this enhanced awareness helped students to choose responses on the surveys.

While the responses of our students were stronger overall, the profile of students in this study was very similar to that found by other researchers working with Japanese students (Reid 1987, Hyland 1993, Ozeki 1995 and Stebbins, 1995). Kinesthetic, auditory and tactile styles are the top three preferences and group is the lowest in all of the studies. (See Figure 1 and Table 2).

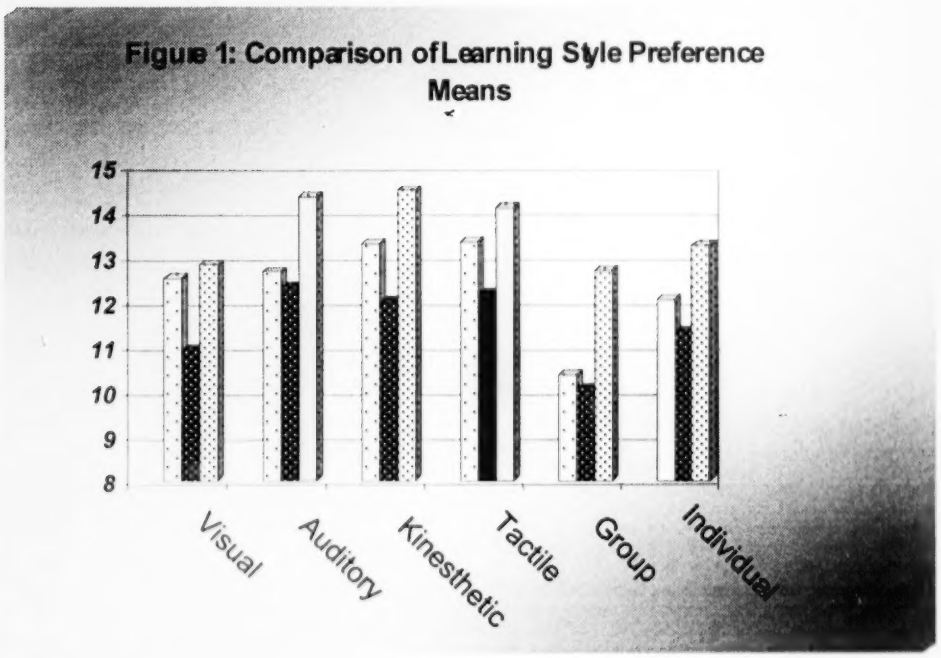


**Table 2: Comparison Of Learning Style Preference Means Of Japanese Students In Reid, Hyland And The Present Study Using Reid's Perceptual Learning Style Preference Questionnaire**

| | MAJOR FIELD | | | | | |
|---|---|---|---|---|---|---|
| **STUDY** | **Visual** | **Auditory** | **Kinesthetic** | **Tactile** | **Group** | **Individual** |
| **Reid** | 12.52 | 12.67 | 13.29 | 13.32 | 10.35 | 12.05 |
| **Hyland** | 10.93 | 12.33 | 12.00 | 12.18 | 10.06 | 11.32 |
| **Thomas/ Cox/Kojima** | 12.82 | 14.33 | 14.46 | 14.09 | 12.68 | 13.25 |

Major preference >13.5 Minor preference 11.5-13.49 Negative Preference < 11.5



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The low preference for group style, which at first seems surprising for Japanese students, is in accord with previous research (see, for example, Nelson 1995, Stebbins 1995, Ozeki 1993). All ESL cultural groups tested by Reid showed a negative preference for the group style (Reid 1987). Nelson speculates that students from 'cooperative cultures', like the Japanese, dislike the continuously changing groups encountered in ESL classrooms. In Japan, groups are much more significant in forming identity, for example as a member of a company or a particular class (Nelson 1995) .The group-work that students encounter in communicative classrooms may thus be considered unhelpful or even threatening.

**Style Analysis Survey:** On the SAS, t' e profile of the average student showed concrete-sequential, hands-on and global preferences. Regarding sensory preferences, 72% of students surveyed expressed a strong preference for a hands-on style, 58% expressed preference for a visual style, and 31% expressed preference for auditory. (These figures add up to more than 100% because some students expressed equal preferences for two or more styles).

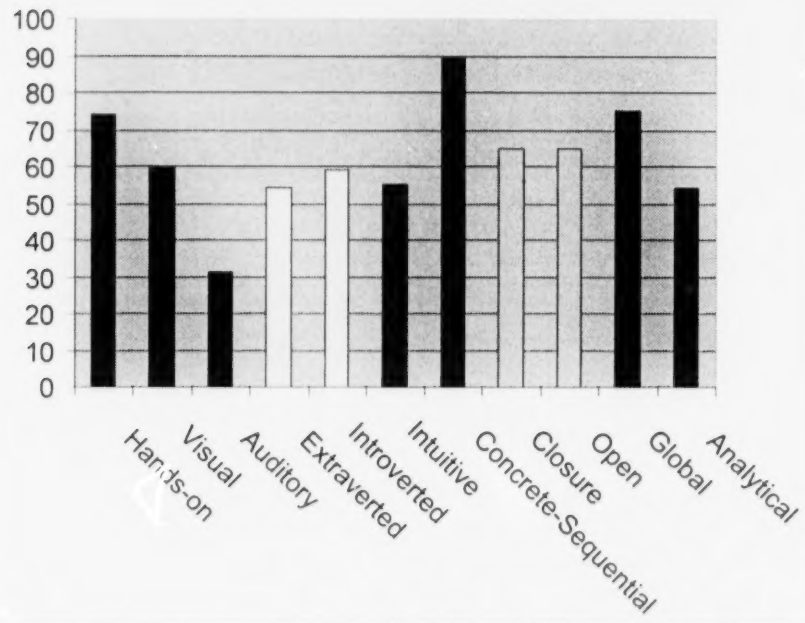
The results for cognitive style showed a very strong preference for concrete-sequential styles over intuitive (90% of students compared to 51%). Oxford describes people with a concrete-sequential style as having a strong preference for step-by-step thinking, for consistency, and for clear goals (Oxford and Ehrman 1993). This result, therefore, is consistent with what might be expected from students who have been through the Japanese education system. More students expressed a preference for global (field-dependent) rather than analytical (field independent) styles of learning (77% as compared to 54%). Global learners are more sensitive to the social context than analytic ones (Oxford 1895), so this result is consistent with the importance of the group in Japanese culture. Numbers were evenly balanced between extraverted/introverted and closure/open modalities (SAS). (See Figure 2.)

When comparing results on the Reid and O: .ord instruments, the positions of auditory and visual preferences are reversed. On the SAS, the visual rather than the auditory modality is the second most popular sensory learning style. One possible explanation for this, is that the SAS includes items regarding both text and graphic reading, whereas the PLSP measures only text reading preference. (See Reid, 1990 for a discussion of the process of writing her survey and validating items). It may be that the two instruments are actually measuring different modalities.

**Gender:** In this study no particular learning style preference was significantly related to gender, although Oxford, summarizing research in this area, suggests that that women are more likely to be less tactile, less kinesthetic and more auditory than men in the sensory style realm, and also more global as opposed to analytical (Oxford 1995).

What women in this study did show was slightly stronger learning style preferences than men overall. They also had somewhat better listening scores on TOEIC, although reading scores were almost the same. Women had significantly better grades than men, with a mean average grade of 70, compared to 61 for men. $F(1, 34) = 8.07$ $p = .005$. This result both contradicts and supports Stebbin's study in which Japanese males had slightly stronger preferences overall and slightly better grades (Stebbins 1995). It appears that strength of preference, as well as choice of preference may be significant for success.

**Figure 2: Percentage of Japanese Students Showing Preferences for Each Learning Style on the Style Analysis Survey (SAS)**




Note: These figures add up to more than 100% because some students expressed equally strong preferences for more than one learning style.

**Table 2: Percentage of Japanese Students Showing Preferences for each Learning Style on the Style Analysis Survey (SAS)**

| Style | % | Style | % | Style | % | Style | % | Style | % |
|---|---|---|---|---|---|---|---|---|---|
| Hands-on | 74 | Extraverted | 54 | Intuitive | 55 | Closure-oriented | 65 | Global | 75 |
| Visual | 60 | Introverted | 59 | Concrete-Sequential | 90 | Open | 65 | Analytical | 54 |
| Auditory | 31 | | | | | | | | |

**TOEIC:** Almost all students at our college sit TOEIC (Test Of English for International Communication), so we were interested to explore any possible relationships between high scores and style. TOEIC is an English language assessment tool favoured by Japanese employers. Scores may range from 10 to 990. The test is divided into two sections, listening and reading, which are each sub-scored out of a possible 495 points. A TOEIC score of 730 is the benchmark used for entry into the bachelors degree programme at our college, and for overseas posting by businesses. A score of 551 is the minimum requirement for new company recruits. After about 18 months overseas, the average TOEIC score of our second-year students was 442, roughly equivalent to the average score of 1997 university graduates who had studied English in Japan. (TOEIC Proficiency Scale).

No significant relationships between TOEIC scores and Reid's PLSP learning styles were found. On Oxford's SAS, simply identifying the most preferred modality

and relating this to TOEIC scores yielded no significant results either, but analysing the data by calculating means, as for Reid's survey, did produce interesting results. There was a surprising negative relationship between the visual modality as measured on the SAS and TOEIC scores. F (4,34)=3.12 $p$=.029 This seemed inexplicable given that previous research has found that visual and auditory styles predict academic success (Prashnig 1998, Reid 1987, etc). One possible explanation for this disparity is that our students may have obtained high visual scores, not because they liked to read text, but because they preferred to watch videos, look at pictures and use graphics.

There was also a significant negative relationship between the hands-on style and TOEIC scores. The more hands-on the student, the lower the TOEIC score. F(4,34)=2.76, $p$=.046.

Variables reported on the Personal Information Survey had the strongest relationship with achievement on TOEIC. Both home-stay experience and previous instruction by a native teacher had a positive effect. Students who had spent as little as three months in a home-stay with a New Zealand family (N = 15) did much better on TOEIC than those who had not (N = 28). The means were 515 and 403, respectively. F (1,42)=13.04 $p < .001$). There was an equally dramatic difference between scores for those who had previous instruction with a native teacher (N= 17) and those who had not (N = 26). Here the means were 500 versus 404. F(1,42)=9.36 $p$=.004 These effects may actually have been even stronger if we had used a different method of coding when analyzing the data. Responses were coded simply as yes or no, so six years of native teacher experience were treated the same as 6 months, one year of home-stay experience was treated the same as 1 month, and so forth.

**Grades:** Although learning style did not seem to be highly related to TOEIC scores, one style variable from Reid's PLSP was related to grades. This was the kinesthetic style F (1,44) = 8.97, $p$ = .005). In contrast, previous research has indicated that students who prefer kinesthetic and tactile ways of learning do not do as well in school classrooms as do auditory and visual students (Prashnig 1998), and that in typical tertiary programmes, most of the time and energy is spent catering for auditory preferences (Reid 1987). However, the diploma in which the students in this study are enrolled is practical and skills-based. There is a range of assessments including some that are performance-based rather than language-based. In accordance with this tendency, kinesthetic students did well in class.

Another variable that positively affected grades was taking part in extracurricular activities. (The mean average grade for those who did so was 70%, compared to 61% for those who did not). F(1, 43) = 7.64 $p$ = .008). Students who took part in extracurricular activities (N = 11) were significantly more kinesthetic than other students (N = 33), and also significantly more hands-on. Most extracurricular activities organized and encouraged by the college revolve around sports, and it may be that this advantages the more physically active students by giving them more frequent opportunities to interact with native speakers.

**Major:** Previous studies have noted that students with different majors tend to have different style preferences (for example, Reid, 1987). In this study, the numbers in each major field of study were very small, but there were some interesting tendencies shown in the SAS results. For example, all computing majors (N=7) had introvert preferences. The business students (N = 18) were more intuitive and closure-oriented. The human environment students (N =18) were more likely to prefer open and global styles (none were analytic).

**Stream:** Researchers using the SAS have documented 'style wars' in which the styles of teachers and students clash. (See, for example, Oxford, Hollaway & Horton-Murrillo 1992 for case studies; and Dreyer 1998 on teachers and students in South Africa). A parallel emerged in this study in comparing the style profiles of different study skills classes. All of the students in this study (regardless of major) did a compulsory study skills course, during which they were introduced to the concept of multiple intelligences, and worked independently of the teacher on a project. In this project, they were encouraged to use not only traditional reading and writing approaches, but also hands-on demonstrations and investigations. It was interesting to compare how the four streams reacted to the same material and ideas. The stream that seemed the most accepting of the study methods also showed the strongest preference for hands-on, for extraverted and for auditory styles on the SAS. It also had a higher mean TOEIC score. The stream that seemed the least accepting of the methods had a significantly lower auditory style preference than other streams and the lowest preference for hands-on, coupled with a very high preference for introversion. The learning style of these students, coupled with their lower English ability, might have led to a lack of confidence that inhibited them from trying new methods. A more gentle approach to introducing new techniques might have been more successful with this particular class.

**Implications for teaching:** It appears that the current hands-on approach to the diploma offered at our college is appropriate for the students who are currently enrolled. However, it may be that too much group work in class should be avoided. Where appropriate, there could be opportunities for students to form their own natural and more meaningful groups. Also, considering the style wars example above, it may be that there is room for more traditional learning approaches. Going gently when introducing new ideas may be wise. Given the large positive impact of home-stay experience and participation in extra-curricular activities on achievement, it must be a priority to encourage both of these. This may be especially true for students who are less kinesthetic and extraverted, and therefore less likely to take part. Perhaps, also, more non-sporting activities could be encouraged to cater for less physically active students.

**Future Study Possibilities:** One possibility for follow-up would be to do comparative studies with other groups of Japanese students at our college, in our city, and in similar study programmes at other institutions to see if any of these groups were also able to identify strong learning style preferences. Another possibility might be to do a larger study and search for significant relationships between style and performance. Relationships between style and standardised language tests such as TOEFL and IELTS could also be explored. Another intriguing avenue of research would be to attempt t match teacher and learner styles in the classroom and document the results. Further possibilities for follow-up include: longitudinal study of the same group of students to see if their preferences alter over time; comparison of Japanese with other cultural groups at this or other institutions; comparisons of the style preferences of teachers and students; case studies of individual students; and qualitative interviews with some students to aid in and refining and validating the translations of the instruments used.

## Conclusion

This study has found further evidence of a Japanese learning style profile, but has left unanswered the question why students in this study expressed preferences more strongly than students in previous studies. It has examined relationships between

learning style and achievement on grades and language tests. It has also looked at the relationship between achievement and other variables and has briefly described an example of a 'style war'. Some implications for teaching institutions have been considered.

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**The researchers welcome communication from others working in this area and from people interested in using the Japanese translation of the SAS.**


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